Superovulation/Intrauterine Insemination (SO/IUI)

This information is part of the informed consent process and should be read carefully by both partners.

What is Superovulation/IUI?

Superovulation/IUI is a fertility treatment that involves taking medications to produce eggs and having an insemination when the eggs are released.

During superovulation, the ovaries are stimulated to produce eggs using injectable medications called "gonadotropins." Gonadotropins contain follicle-stimulating hormone (FSH), which is produced naturally by the body to cause egg development and release. The gonadotropins cause the growth of follicles in the ovary, which are fluid-filled sacs containing an egg.

Gonadotropins can be used to induce ovulation in women who do not cycle or ovulate regularly, for example women with PCOS or hypothalamic amenorrhea. They can also be used to cause the development and ovulation of several eggs in women with other causes of infertility, such as unexplained or age-related infertility.

There are several gonadotropins available in Canada, including Gonal-F, Puregon, Bravelle and Menopur.

A related medication called human chorionic gonadotropin (hCG). HCG is commonly used to trigger ovulation once follicles have matured.

When the follicles are ready to ovulate, intrauterine insemination is performed. This is a procedure in which the male partner provides a fresh sperm sample on the day of ovulation. The sperm sample is then prepared so that the healthiest sperm are concentrated into a droplet. This droplet is then placed in the woman's uterus. Sometimes in superovulation/IUI, donor sperm may be used instead. IUI is done so that the sperm are closer to the egg and do not have to swim through the vagina and cervix.

When Might Superovulation/IUI be an Appropriate Treatment?

- Unexplained infertility
- Mild endometriosis
- Infertility related to increased female age
- Lack of, or infrequent ovulation (PCOS, hypothalamic amenorrhea)
- Mild male factor infertility

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The Steps in Superovulation/IUI

1) Suppression of the natural menstrual cycle - This may be required in order to schedule your treatment cycle. This is usually done with a short course of the birth control pill.

2) Stimulation of the ovaries with injectable hormones - Daily FSH injections are taken to stimulate the growth of 2-4 ovarian follicles. You will be taught how to give these injections yourself. They are taken daily for about 10-14 days, starting on day 1-3 of your menstrual cycle.

3) Monitoring of treatment with transvaginal ultrasound and bloodwork - It is very important to determine how many follicles are developing, and when they are ready to ovulate. During this time, close monitoring with blood tests and vaginal ultrasounds is required. The first 4-5 days of treatment do not require close monitoring but after this time, testing will be done every 1-2 days to monitor progress.

4) Triggering of ovulation - This is done with an injection of hCG (human chorionic gonadotropin). The hCG causes final maturation of the egg(s), followed by ovulation or release of the egg(s) approximately 36-40 hours later. The timing of this injection is important as it helps to time the insemination to be performed around the time of ovulation.

5) Timed Intrauterine Insemination (IUI) - A sperm sample is provided on the day of ovulation. It is prepared so that the moving sperm are concentrated into a droplet. If you are using donor sperm, the sample is thawed and "washed," or rinsed of the chemicals used to protect the sperm from the freezing process. Once prepared, the sperm sample is placed into the uterus through the cervix using a small, flexible tube, or "catheter." This is a simple procedure, similar to a pap test, with minimal discomfort.

6) Luteal phase support - Following the IUI, you will start progesterone supplementation (Prometrium, Endometrin, Crinone). Progesterone is produced during a natural menstrual cycle to create the ideal environment for the fertilized egg to implant in the uterus. This medication continued until the pregnancy test, which is done 2 weeks following IUI. If you are pregnant, you will continue the progesterone during the first trimester.

Risks of Superovulation/IUI

- Medication side effects - Exaggeration of symptoms that frequently occur during the menstrual cycle, such as feeling of heaviness or bloating in the pelvis, mood changes, headaches, breast tenderness and decrease in energy level may occur.

- Ovarian Hyperstimulation Syndrome (OHSS) - OHSS is characterized by enlarged ovaries and fluid accumulation in the abdomen after ovulation in a cycle in which gonadotropin medications were taken. The chance of OHSS is increased in women with polycystic ovarian syndrome (PCOS) and in cycles resulting in pregnancy. It ranges from mild to severe.

The mild form occurs in 10% to 20% of superovulation cycles and results in abdominal bloating and discomfort but almost always resolves without complications. These cases can be managed by rest, plenty of fluids and mild pain medications such as acetaminophen.

The severe form occurs in approximately 1% of women undergoing superovulation. When severe, if left untreated it can result in blood clots, kidney dysfunction, twisting of an ovary (torsion), fluid collections in the chest and abdomen, and very rarely death. In severe cases, hospitalization is required for monitoring and treatment. The condition is temporary, usually lasting only a week or two. Occasionally, it is necessary to drain the excess fluid in the abdomen to relieve symptoms. Most patients who are at high risk for severe OHSS are identified by closely monitoring ovulation induction cycles with the daily use of ultrasounds. There are several strategies which are used to prevent or minimize the development of severe OHSS.

- Multiple pregnancy - Twin pregnancies occur in 1-2% of naturally-conceived pregnancies. Women conceiving with SO/IUI have a 20-25% chance of having a multiple pregnancy, the vast majority of which are twins. Triplets or higher order pregnancies can occur, but are much less frequent; only 1-3% of pregnancies. While many couples who have been struggling with infertility may welcome the opportunity to have more than one baby at a time, it is important to realize that twins are a high risk pregnancy and triplets or higher are extremely high risk for both mother and babies. Compared to single pregnancies, multiple pregnancies are associated with an increased risk of pregnancy loss, premature delivery, infant abnormalities and developmental delays due to the consequences of very premature delivery, pregnancy induced hypertension, bleeding, and other significant maternal complications. In general, the risk of severe complications increases as the number of babies increases.

- Ectopic pregnancy - Ectopic pregnancies are pregnancies that develop outside the usual location in the uterus, usually in the fallopian tube. While ectopic pregnancies occur in 1% to 2% of spontaneous pregnancies, in superovulation cycles the rate may be slightly increased. This type of pregnancy is abnormal and cannot result in the delivery of a baby. The greatest concern is that if left untreated, the tube may burst resulting in severe, life-threatening bleeding in the abdomen.

  Ectopic pregnancies can be treated with medications or surgery. Rarely, a tubal pregnancy occurs at the same time as an intrauterine pregnancy; this condition is known as heterotopic pregnancy and may be difficult to diagnose.

- Birth defects and pregnancy complications - Although the vast majority of pregnancies are entirely normal, recent studies suggest the possibility that complications during pregnancy may be increased slightly. Pregnancy-associated hypertension and abruption (or separation) of the placenta may be increased. It is not clear if the risks are related to the gonadotropin therapy or are related to infertility. There is a possible risk of fetal abnormalities with all pregnancies; this is not known to be increased with SO/IUI. The risk of miscarriage does not appear to be increased with this treatment.

- Gonadotropins and the risk of ovarian cancer - Although early studies suggested that the risk of ovarian cancer might be increased in women exposed to medications for superovulation, more recent studies have not shown any such relationship. It is generally felt that gonadotropin therapy does not increase the risk of ovarian cancer.
- Cycle cancellation - Each woman responds in her own way to gonadotropin medication. Sometimes the response is too fast or too strong, and the physician supervising the cycle may feel that it is better to stop the medications to avoid excessive risk, particularly of OHSS or multiple pregnancy. Medication dosages and protocols will be reviewed and modified, if necessary, to reduce risks and/or improve response at the next attempt. Cancelling a cycle once it is started does not happen very often, but sometimes it may be necessary.

Conversion of a Superovulation Cycle to IVF

The goal of a superovulation / IUI cycle is stimulate the growth of 1-2 follicles in women who do not cycle regularly or 2-4 mature follicles in women who do cycle regularly. In some women, despite careful monitoring and dose adjustment, too many mature follicles may develop. This may increase the risk of a high-order multiple pregnancy (i.e. more than 2 babies). In this situation, your physician may suggest converting the cycle to IVF. This involves removing the mature eggs from the ovaries, fertilizing them in the lab, then replacing no more than 1 or 2 embryos back into the uterus. This is a way to reduce the risk of a multiple pregnancy. The alternative may be to cancel the cycle. There is an additional cost for IVF conversion.

Emotional Aspects of Infertility

Infertility can be very stressful for couples. Hope and anticipation alternate with disappointment and despair. Men and women experience these emotions in different ways, which can often lead to more stress. While it would be wonderful if all couples undergoing treatment were able to conceive, the reality is that this does not happen. It is important to prepare yourself for the possibility of both a successful, and an unsuccessful outcome. If you are struggling with the emotional stress of infertility, please do not hesitate to discuss this with one of the physicians or nurses. We can also help you to access professional counselling services.